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Wisconsin Department of Commerce

HOBBY BOILER INSPECTION CHECKLIST

Inspection Date:_____

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04 (1)(m)].

Owner:	Site:
Address:	Address:
City:	City:
State/Zip:	State/Zip:
Telephone:	County:

Regulated Object

Tag No:	Type:	Manufacturer:		Mfg. Serial:	Year:	Htg. Surface:
MAWP:	SRV Set:	SRV Cap:	Joint Type:	Joint Eff.:	FS:	Staybolt Pitch:

Hydro Test		
Date		
Pressure		

Gauge	
Calibration Date	

Fusible / Soft Plug	
Removed ☐	Replaced ☐

Stays
Welded ☐
Threaded ☐

Condition
Acceptable ☐
Broken ☐

Barrel UT Thickness Readings						
Front						
Center						
Rear						

Calculation

$$P = \frac{TS \times t \times E}{R \times FS}$$

Crown Sheet UT Thickness Readings						
Front						
Center						
Rear						

Calculation
See attached Formula Sheet

Firebox UT Thickness Readings						
Front						
Center						
Rear						

Calculation
See attached Formula Sheet

Calculation Values		**Joint Efficiencies**
P= MAWP	E= joint efficiency	.58 = single lap
p= staybolt pitch	R= barrel inside radius	.74 = double lap
t = minimum plate thickness UT test	*****FS= 5 Non-ASME Stamped	.82 = double butt
S= stress-13,800/SA285C 13,800	C= 2.1 orig. plate T ≤7/16”	.88 = triple butt
TS= 55,000	C= 2.2 orig. plate T >7/16”	.94 = quadruple butt

Qualified UT Technician Name: **Signature:**

_____ _____

Equations & Formulas

Reference NBIC, 2004 Appendix C
(Specific section **bolded**)

C-4030
Cylindrical Components

$$P = \frac{TS \times t \times E}{R \times FS}$$

C-4040
Stayed Surfaces

$$P = \frac{t^2 \times TS \times C}{FS \times p^2}$$

C-4050
Braced & Stayed Surfaces
(Required brace/stay diameter)

$$P = \frac{3.1416 \times d^2 \times TS}{FS \times 4 \times p^2}$$

C-4070

Nomenclature

P = MAWP
p = staybolt pitch
t = minimum plate thickness
d = staybolt dia over threads
S = stress-13,800/SA285C
TS = 55,000
R = barrel inside radius
FS = 5 Non–ASME Stamped *
E = joint efficiency (see below)
C = 2.1, original plate t $\leq$ 7/16”
C = 2.2, original plate t > 7/16”
For additional C values see NBIC

Joint Efficiencies “E”
(riveted joints)

Single lap = .58
Double lap = .74
Double butt = .82
Triple butt = .88
Quadruple butt = .94

***** Factor of Safety (FS) =Tensile Strength /Allowable Stress
(factor of safety or the ratio of the tensile strength of the material to the allowable stress)

Note: The maximum allowable working pressure determined by the conditions obtained in service shall not exceed that which the boiler was designed.